DIRECT WRITING OF OPTICAL DEVICES IN SILICA-BASED GLASS USING FEMTOSECOND PULSE LASERS

Abstract

[89] The invention relates to methods of writing a light-guiding structure in a bulk glass substrate. The bulk glass substrate is preferably made from a soft silica-based material having an annealing point less than about 1380°K. A pulsed laser beam is focused within the substrate while the focus is translated relative to the substrate along a scan path at a scan speed effective to induce an increase in the refractive index of the material along the scan path. Substantially no laser-induced physical damage of the material is incurred along the scan path. Various optical devices can be made using this method.